CONTENTS

NUMBER 1

L. SCHÜTZ and M. SEBERT — 1 Mineral aerosols and source identification

A. W. SHEAFFER — 11 Drag on modified rectangular prisms

R. L. GRUEL, C. R. REID and R. T. ALLEMANN — 17 The optimum rate of drum rotation for aerosol aging

G. O. RUBEL and J. W. GENTRY — 23 Onset of particle crystallization resulting from acid droplet ammonia gas reactions

J. PICH, H. EMI and C. KANAOKA — 29 Coulombic deposition mechanism in electret filters

F. BELOSI and V. PRODI — 37 Particle deposition within the inertial spectrometer

A. G. AMELIN and A. N. KABANOV — 43 Capture of aerosols by operating catalyst—ZARK effect

W. D. BENNETT and G. C. SMALDONE — 49 Inspiratory vs expiratory aerosol deposition in excised dog lungs

J. R. BROCK and J. OATES — 59 Moment simulation of aerosol evaporation

W. BEHNKE, F. NOLTING and C. ZETZSCH — 65 A smog chamber study on the impact of aerosols on the photodegradation of chemicals in the troposphere

P. Y. YU, C. C. WANG and J. W. GENTRY — 73 Experimental measurement of the rate of unipolar charging of actinolite fibers

D. L. JOHNSON, D. LEITH and P. C. REIST — 87 Drag on non-spherical, orthotropic aerosol particles

H. HORVATH, J. GORRAIZ and G. RAIMANN — 99 The influence of the aerosol on the color and luminance differences of distant targets

O. PREINING — 113 Marian Smoluchowski Ritter von Smolan

115 Smoluchowski Award 1986

117 Announcements

i Contents for *Journal of Aerosol Research, Japan*, Vol. 1, No. 3, Autumn 1986

NUMBER 2

119 Editorial

121 Obituary Notice: Agnes Mészáros (1935–1986)

Y. Ishizu, K. Kaneki and T. Okada	123	A new method to determine the relation between the particle size and chemical composition of tobacco smoke particles
G. de Leeuw and C. W. Lamberts	131	Influence of refractive index and particle size interval on Mie calculated backscatter and extinction
E. R. Buckle and K. J. A. Mawella	139	Nucleation and growth of metallic particles in evaporation plumes
G. Dau and F. Ebert	147	Determination of aerosol deposition on the front and wake side of spheres by gas-chromatography
K. Y. K. Chung, T. L. Ogden and N. P. Vaughan	159	Wind effects on personal dust samplers
M. Ramamurthi and K. H. Leong	175	Generation of monodisperse metallic, metal oxide and carbon aerosols
E. F. Aharonson and N. Dinar	193	The effect of gravity on deposition distances in an inertial particle spectrometer
B. T. Chen and H. C. Yeh	203	An improved virtual impactor: design and performance
J. R. Turner and S. V. Hering	215	Greased and oiled substrates as bounce-free impaction surfaces
	225	News Page
	227	Book Review
	229	Announcement

NUMBER 3

J. P. Mitchell, K. W. Snelling and R. L. Stone	231	Improvements to the vibrating orifice aerosol generator
J. W. Cipolla, Jr and T. F. Morse	245	Thermophoresis in an absorbing aerosol
B. Z. Gorbunov, N. A. Kakutkina, K. P. Koutzenogii, A. E. Pashenko and A. S. Safatov	261	Kinetics of ice nucleation on aerosol particles in supercooled fog—I. The influence of water vapour depletion
A. E. Pashenko and B. Z. Gorbunov	269	Kinetics of ice nucleation of aerosol particles in supercooled fog—II. Ice crystal growth and precipitations

F. P. PARUNGO, C. T. NAGAMOTO, R. MADEL, J. ROSINSKI and P. L. HAAGENSON — 277 Marine aerosols in Pacific upwelling regions

J. ROSINSKI, P. L. HAAGENSON, C. T. NAGAMOTO and F. PARUNGO — 291 Nature of ice-forming nuclei in marine air masses

J. S. BRENIZER, M. F. SULCOSKI, K. W. TOBIN, JR, R. W. JENKINS, JR and D. D. MCRAE — 311 Evaluation of filter behavior by neutron radiography

R. K. BULL, D. C. STEVENS and M. MARSHALL — 321 Studies of aerosol distributions in a small laboratory and around a humanoid phantom

T. MYOJO — 337 Deposition of fibrous aerosol in model bifurcating tubes

349 Book Reviews

351 Announcement

353 Erratum

i Contents for *Journal of Aerosol Research, Japan*, Vol. 1, No. 4, Winter 1986

NUMBER 4

G. MADELAINE and A. RENOUX — 355 80ème Anniversaire du Professeur Jean Bricard

S. HASSID, A. ORON and C. GUTFINGER — 357 An asymptotic description of electrostatic precipitation of charged particles in turbulent flow

L. W. HOURNG and G. EMANUEL — 369 Particle motion in a supersonic vortex flow

P. V. N. NAIR, P. V. JOSHI and U. C. MISHRA — 381 Effect of size distribution of condensation nuclei on pressure in an expansion counter

P. LILIENFELD — 389 Light scattering from oscillating fibers at normal incidence

M. LEHTIMÄKI — 401 New current measuring technique for electrical aerosol analyzers

D. WU, A. R. MCFARLAND and R. A. FJELD — 409 Continuum field-diffusion charging of particles possessing non-zero initial charge

C. P. YU and G. B. XU — 419 Predicted deposition of diesel particles in young humans

C. J. DE RUITER and F. OESEBURG — 431 A comparison of parameter estimation procedures for experimental bimodal lognormal particle size distributions and grouped data

W. W. NAZAROFF and G. R. CASS 445 Particle deposition from a natural convection flow onto a vertical isothermal flat plate

Technical Note
G. KASPER 457 Wall correction to the Stokes resistance of arbitrarily shaped particles

461 Conference Report

463 Book Review

465 Announcement

NUMBER 5

W. D. GRIFFITHS and N. P. VAUGHAN 467 Report of the Inaugural Meeting of the Aerosol Society

C. N. DAVIES 469 Particles in the atmosphere: a review

J. W. GENTRY 479 Survey of recent measurements with asbestos fibers

J. H. VINCENT 487 Recent advances in aspiration theory for thin-walled and blunt aerosol sampling probes

R. C. BROWN, J. K. W. DAVIES and D. WAKE 499 Penetration of test aerosols through filters described in terms of a Gamma distribution of layer efficiencies

K. H. LEONG 511 Morphological control of particles generated from the evaporation of solution droplets: theoretical considerations

K. H. LEONG 525 Morphological control of particles generated from the evaporation of solution droplets: experiment

S. J. DUNNETT and D. B. INGHAM 553 The effects of finite Reynolds number on the aspiration of particles into a bulky sampling head

W. NIXON and M. J. EGAN 563 Modelling study of regional deposition of inhaled aerosols with special reference to effects of ventilation asymmetry

Technical Note
J. SCHLATTER, A. SCHMIDT-OTT and H. BURTSCHER 581 A simplified electrostatic aerosol analyzer

585 Book Review

587 Thanks to Referees

NUMBER 6

Special Issue: Aerosols in Science, Medicine and Technology with Special Emphasis on Urban and Environmental Air Pollution

1. *Plenary Lecture*

O. PREINING: The environmental consequence of a nuclear war. The report SCOPE 28-1986 589

2. *Source Apportionment*

W. A. VAN BORM and F. C. ADAMS: Source apportionment of air particulate matter in Antwerp, Belgium 593

E. SWIETLICKI, H.-C. HANSSON, B. SVANTESSON, B. G. MARTINSSON and L. ASKING: Source area identification of long range transported aerosols 597

A. VAN DER MEULEN and B. G. VAN ELZAKKER: Aerosol phenomenology of air pollution episodes 601

3. *Atmospheric Aerosol and Deposition*

K. R. SPURNY, H. MARFELS, J. SCHÖRMANN, H. OPIELA and G. WEISS: Atmospheric aerosols and building corrosion 605

A. WYTTENBACH, L. TOBLER and S. BAJO: Deposition of aerosol on spruce needles and its chemical composition 609

4. *Particle Properties and Basic Aerosol Properties*

F. RAES and S. K. FRIEDLANDER: Monodisperse aerosol production in continuously reinforced reactors 613

M. KULMALA, M. OLIN and T. RAUNEMAA: Extension of atomistic nucleation theory for non-ideal vapours 615

J.-S. CHANG, T. ISHII, S. MATSUMURA, S. ONO and S. TEII: Theory of aerosol particle thermal deposition on a flat body in a variable property fluid 619

H. FISSAN and J. R. TURNER: Particle deposition from turbulently-mixed gases: electrostatic effects 623

H. MARFELS, K. R. SPURNY, F. JAEKEL, CH. BOOSE, W. ALTHAUS, H. OPIELA, J. SCHÖRMANN, G. WEISS and F. J. WULBECK: Asbestos fiber measurements in the vicinity of emittents 627

S. PICKERING: Particle distributions in simulated agglomeration 631

J. STEINWANDEL, J. HÖSCHELE and M. HAUSER: Spectroscopic investigations of formation kinetics of ultrafine boron-aerosols behind shock waves 635

G. A. FERRON and S. C. SODERHOLM: Estimation of the evaporation or stabilization times of water droplets 639

J. KUKKONEN and M. KULMALA: Estimating the aerosol behaviour of a turbulent two-phase jet 643

J. C. BARRETT and C. F. CLEMENT: The behaviour of water droplet size distributions interacting with radiation 647

F. STRATMANN, S. FRIEDLANDER, H. FISSAN and A. PAPPERGER: Suppression of particle deposition to surfaces by the thermophoretic force 651

H. BUNZ and G. METZIG: Comparison of model calculations to experiments investigating particle formation in a flow tube reactor 655

R. VAN DINGENEN, F. RAES and H. VANMARCKE: Deposition of gases and aerosols in smogchambers made of glass 659

H. BUNZ, W. SCHÖCK, M. KOYRO, J. GENTRY, S. PLUNKETT, M. RUNYAN, C. PEARSON and C. WANG: Application of the log beta distribution to aerosol size distributions 663

R. JONAS, W. SCHÜTZ and U. DIELMANN: Particle deposition in expanding and oscillating gas bubbles 667

H. P. KÖNIG, W. KOCH, L. NEDER and U. GRAVES: Chemical and physical characterisation of metal grinding dusts 671

5. *Radioactive Aerosols*

A. RENOUX: Natural atmospheric radioactivity and radioactive aerosol. The problem of radon 222 and daughters indoors 677

H.-G. HORN, H. BONKA and M. MAQUA: Measured particle bound activity size-distribution, desposition velocity and activity concentration in rainwater after the Chernobyl accident 681

U. BALTENSPERGER, H. W. GÄGGELER, D. T. JOST, B. ZINDER and P. HALLER: Chernobyl radioactivity in size-fractionated aerosol 685

J. TSCHIERSCH and B. GEORGI: Chernobyl fallout size distribution in urban areas 689

T. RAUNEMAA, S. LEHTINEN, H. SAARI and M. KULMALA: 2–10 μm sized hot particles in Chernobyl fallout to Finland 693

6. *Health Effects*

W. HADNAGY and N. H. SEEMAYER: Comparative investigation on the genotoxicity of city smog and automobile exhaust particulates 697

T. REPONEN, H. KOKOTTI, T. SAVOLAINEN and T. RAUNEMAA: Indoor air quality in three small housing flats with different ventilation systems 701

H. BEHRENDT, N. H. SEEMAYER, A. HOLLE and W. DEHNEN: Effect of extract of airborne particulates and of Ca^{++}-ionophore A23187 on formation and release of surfactant from human type II pneumocytes 705

P.-L. KALLIOMÄKI, K. KALLIOMÄKI, M. MOILANEN and K. HAAPA: Retention of ferrimagnetic dust into foundry workers' lungs 709

P.-L. KALLIOMÄKI, P. PÄÄKKÖ, K. MALMQVIST, J. PALLON, S. ANTTILA, H. VAINIO, K. KALLIOMÄKI and S. SUTINEN: Multielement analyses in human lung tissue correlated with smoking, pulmonary emphysema and lung cancer 711

S. TAKENAKA, S. RITTINGHAUSEN, B. BELLMANN, O. CREUTZENBERG, H. MUHLE and U. MOHR: Morphological effects of 'nuisance' dusts on the respiratory system in rats 717

N. H. SEEMAYER, W. HADNAGY, R. TOMINGAS and N. MANOJLOVIC: Cell- and genotoxic activities of airborne particulates from a highly industrialized region: a survey over a period of 11 years (1975–1986) 721

7. *Deposition and Clearance*

G. SCHEUCH and W. STAHLHOFEN: Particle deposition of inhaled aerosol boluses in the upper human airways 725

P. PAGANO, M. CALAMOSCA, G. FAGARAZZI, S. BRUNI and G. FORNER: Morphological injuries and kinetic clearance affectation in trachea of rats exposed to sodium combustion products 729

M. DAHLBÄCK, I.-B. KARLBERG, O. NERBRINK, M. PRYTZ and P. WOLLMER: Deposition of tracer aerosols in the rabbit respiratory tract 733

P.-L. KALLIOMÄKI, A. AITIO, E.-L. LAKOMAA and K. KALLIOMÄKI: Kinetics of the metal components of intratracheally instilled mild and stainless steel welding fumes in rats 737

W. STAHLHOFEN, J. GEBHART, G. RUDOLF, G. SCHEUCH and M. R. BAILEY: Human lung clearance of inhaled radioactively labelled particles in horizontal and vertical position of the inhaling person 741

G. OBERDORSTER, C. COX and R. BAGGS: Long term lung clearance and cellular retention of cadmium in rats and monkeys 745

W. G. KREYLING and G. SCHUMANN: Particle transport from the lower respiratory tract 749

U. RAMM, G. RUDOLF, J. HEYDER and J. GEBHART: Studies of gas mixing in the human lung by means of aerosols 753

A. BLACK, J. N. PRITCHARD and M. WALSH: An exposure system to assess the human uptake of airborne pollutants by radio-tracer techniques, with particular reference to sidestream cigarette smoke 757

8. *Charged Particles*
W. D. GRIFFITHS: The selective separation of aerosol particles of different shape 761
J. S. CHANG and S. ONO: Diffusion charging of nonspherical particles by bipolar ions under external magnetic fields 765
E. FLECK and B. ELIASSON: An ion source for unipolar charging of particles in an AC-field 769
H. MÄTZING, H.-R. PAUR and J. W. GENTRY: Zur Bedeutung Heterogener Ionensenken beim Elektronenstrahlverfahren 773

9. *Particle Structure*
E. HEIDENREICH: Particle characterization by size and shape 777
P.-L. KALLIOMÄKI, A. GREKULA, J. HAGBERG and S. SIVONEN: Analytical electron microscopy of welding fumes 781
E. STRAUBEL and H. STRAUBEL: Observation of molecular aggregates in spheres and on the surface of water solutions 785

10. *Measuring Techniques*
N. P. VAUGHAN: The design, construction and testing of an axial flow cyclone preseparator 789
K. H. ENDERLE and W. JAESCHKE: Problems of fog sampling 793
H. MANNS: Appliance of automated radiometric TSPM monitors in ambient air pollution control systems 797
J. PICH and W. HOLLÄNDER: Permeability of pore-structure filters 801
W. HOLLÄNDER, G. POHLMANN and M. HOLLÄNDER: A laser Doppler method for the determination of particle fluxes: first results 805

11. *Atmospheric Aerosols and Source Resolution*
P. R. BÜRKI, U. P. NYFFELER and B. C. GÄLLI: Source analysis of heavy metals adsorbed on aerosols as a function of their size distribution 809
B. C. GÄLLI and U. P. NYFFELER: Height dependence of heavy metal size distribution and concentration on aerosols 813
H. HORVATH, I. KREINER, C. NOREK and B. GEORGI: The role of the diesel aerosol in the air pollution of Vienna 817
T. SCHUMANN and A. WALDVOGEL: Meteorological effects on ambient aerosol size distributions 821
U. BALTENSPERGER: Chemical and morphological characterization of airborne particulate matter 825
Y. VIISANEN, M. KULMALA, R. HILLAMO, J. HATAKKA and P. KERONEN: Formation of acid aerosols: field and laboratory measurements 829
D. GREVE, R. STELZER and B. GEORGI: The uptake of aerosols through lenticels 833
H. P. KÖNIG, U. LAHL and H. KOCK: Determination of organic volatiles in ambient air in the area of a landfill 837
B. BRINGFELT: Particle concentration model in a small town street based on receptor studies 841

12. *Aerosol Chemistry*
K. LEVSEN, J. SCHILHABEL and U. PUTTINS: Progress in the analysis of diesel soot particles 845
W. BEHNKE, F. NOLTING and C. ZETZSCH: The atmospheric fate of di-(2-ethylhexyl-)phthalate, adsorbed on various metal oxide model aerosols and on coal fly ash 849
W. BEHNKE, F. NOLTING and C. ZETZSCH: The hydrolysis of a monolayer of di-(2-ethylhexyl-)phthalate, adsorbed on various atmospheric model aerosol materials 853
R. BÖHM and G. W. ISRAËL: A continuous sulfuric acid and sulfate monitor for ambient air 857

13. *Aerosol Generation and Measuring Techniques*

J.-S. CHANG: The effects of space charge density on the aerosol particle collection efficiency in co-flow type electrostatic packed bed filters 861

H. MANNS: Intercomparison and simultaneous calibration of radiometric TSPM monitors with test aerosol 865

B. ELIASSON, W. EGLI, J. R. FERGUSON and H. JODEIT: Coagulation of bipolarly charged aerosols in a stack coagulator 869

A. ANSELM, J. GEBHART and J. HEYDER: Interpretation of response functions of optical particle counters in terms of classical optics 873

C. HELSPER and W. MÖLTER: Determination and neutralization of the charge produced by the dispersion of powders 877

T. M. MERRIFIELD: Design and operation of a volatile organic compound canister sampler 881

H. BAUMGARTNER AND F. LÖFFLER: Three-dimensional numerical simulation of the deposition of polydisperse aerosol particles on filter fibres—extended concept and preliminary results 885

D. SEEHARS, D. HOCHRAINER, W. MÖLTER and M. SPIEKERMANN: Generation of monodisperse particle fractions with the inertial particle classifier (INPAC) 889

H.-R. PAUR and S. JORDAN: The influence of SO_2 and NH_3 concentrations on the aerosol formation in the electron beam dry scrubbing process 893

G. Poss and G. METZIG: Extinction coefficient measurement of ambient aerosol particles using a 'White Cell' 895

G. S. SPAGNOLO: Automatic instrument for aerosol samples using the beta-particle attenuation 899

W. HOLLÄNDER, M. HOLLÄNDER, A. BEYER and W. KOCH: Development of a method for the high-production generation of fibrous material with aerodynamic diameters less than 3 microns 903

W. HOLLÄNDER, W. DUNKHORST, R. BRANDT and P. VATER: Measurement of absorbing aerosols with piezo-electric filters from polyvinylidenefluoride (PVDF): first results 907

G. J. PRAML and R. KESSEL: Continuous full shift personal dust exposure monitoring 911

A. VAN DER MEULEN: Black smoke revisited 915

D. WINDELBERG, FR.-W. BACH, B. GEORGI and H. STEINER: Quality of plasma-arc cutting and aerosol-generation 919

14. *Nuclear Aerosols*

S. PICKERING and S. FOURCAUDOT: The penetration of filters by alpha-active aerosols 923

S. PICKERING: Resuspension of uranium–plutonium oxide particles from burning Plexiglas 927

P. VATER, R. DERSCH, R. BRANDT, G. LUTHARDT and W. RUDOLPH: Detailed chemical analysis of aerosols carrying radioactivity and collected with mica track microfilters 931

R. JONAS and H. BUNZ: Aerosol behaviour calculations performed with the CONTAIN code in comparison to PARDISEKO calculations and to experiments 935

P. ANTTILA, M. KULMALA and T. RAUNEMAA: Dry and wet deposition of Chernobyl aerosols in southern Finland 939

Alphabetical List of Authors 943

Smoluchowski Award 1987 *Recipient: Dr Helmut Bunz* 945

Smoluchowski Award (GAeF) 947

News Page 949

Announcement 951

Contents for Journal of Aerosol Research, Japan, *Vol.* 2, *No.* 2, *Summer* 1987 i